

FIG. 1A

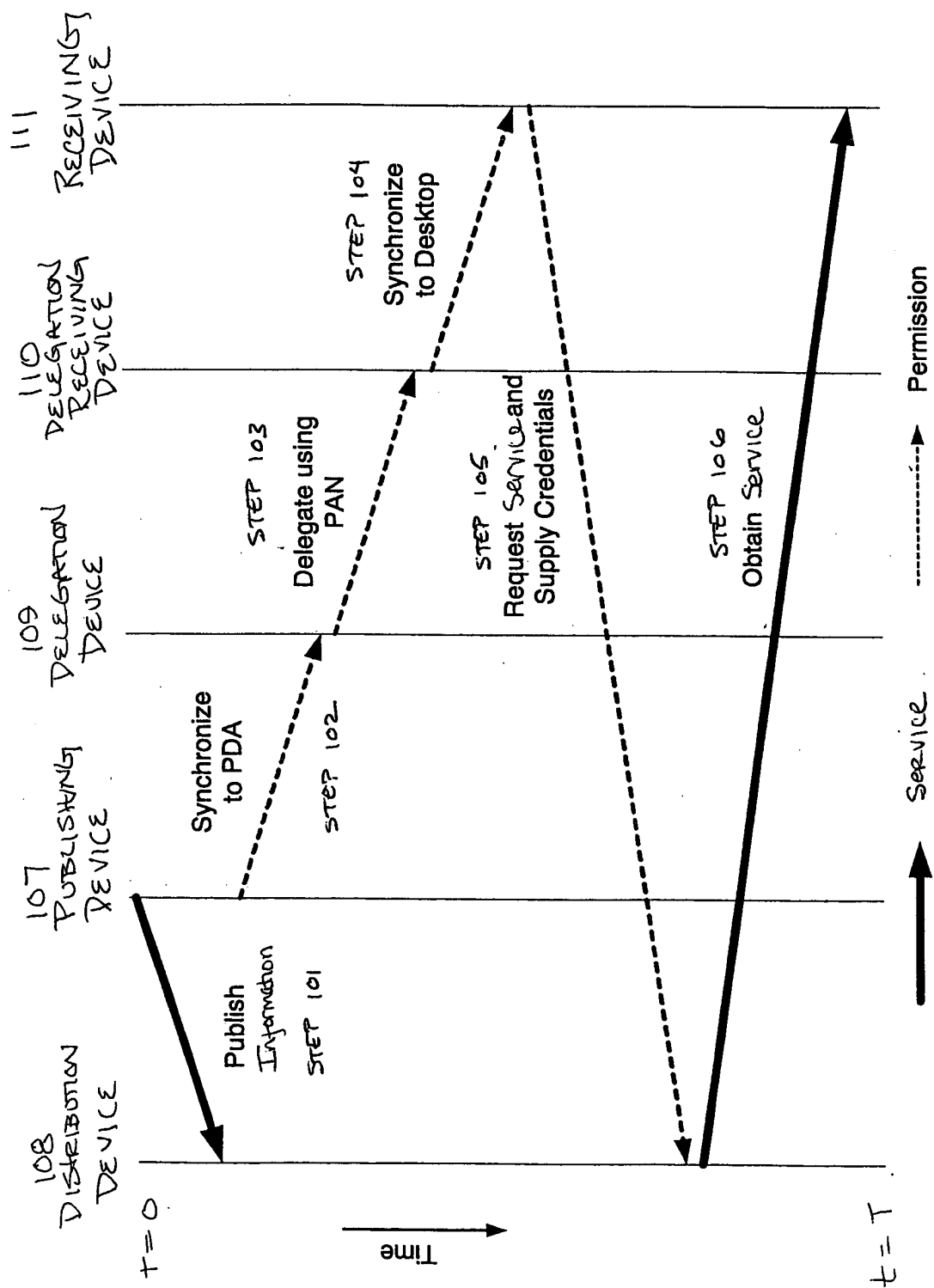
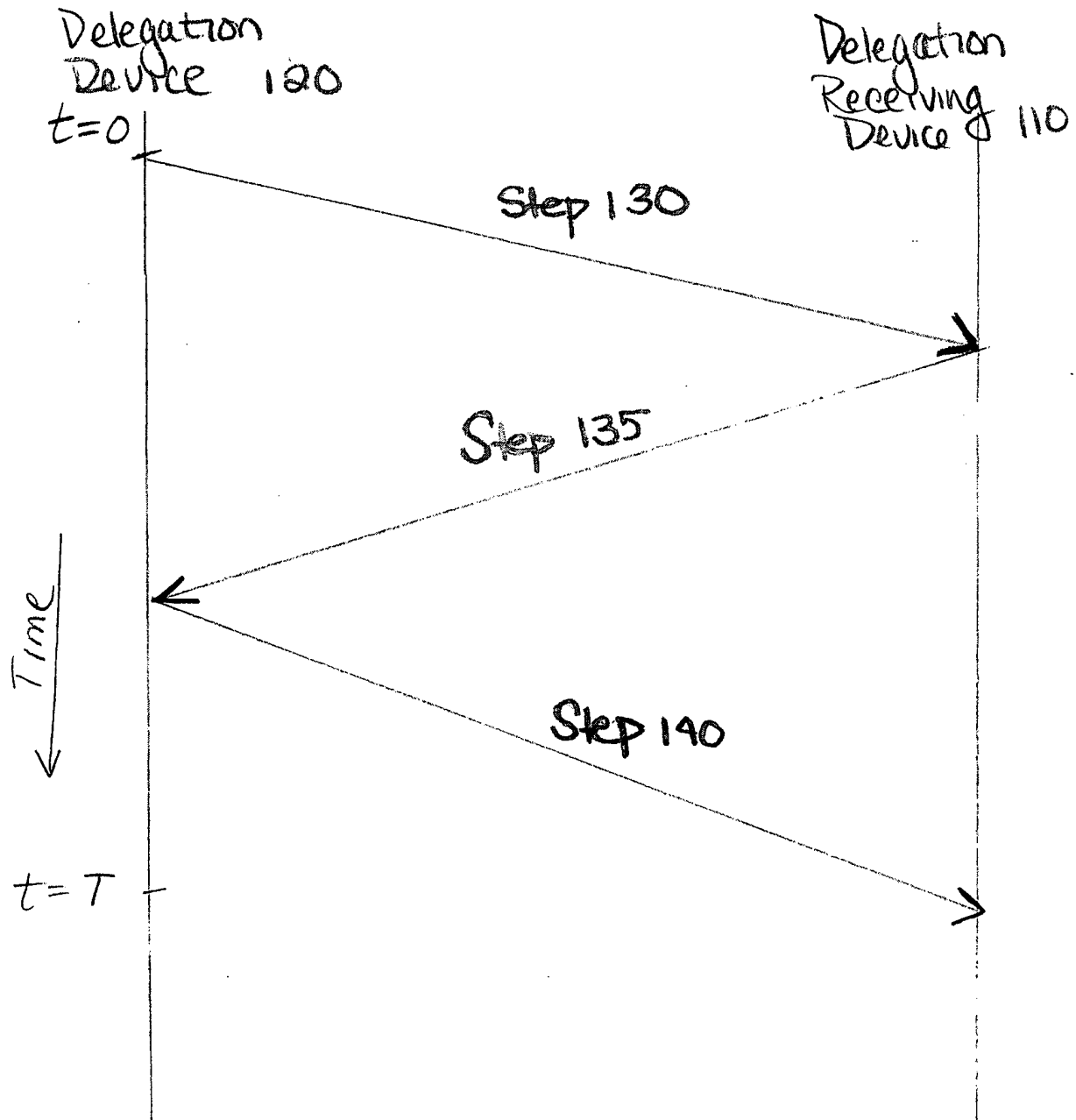


FIG. 1B



Data Structure Definitions in ASN.1

permissionChain ::= SEQUENCE OF permissionLink

permissionLink ::= SEQUENCE {
permissionLinkComponent permissionLinkComponent,
Signature OCTET STRING
}

permissionLinkComponent ::= SEQUENCE {
Name OCTET STRING,
Uri OCTET STRING,
Description OCTET STRING,
Note OCTET STRING,
Version INTEGER,
Src_p INTEGER,
Src_q INTEGER,
Src_g INTEGER,
Src_pub INTEGER,
Src_x509cert OCTET STRING,
Src_email OCTET STRING,
Subj_p INTEGER,
Subj_q INTEGER,
Subj_g INTEGER,
Subj_pub INTEGER,
Subj_x509cert OCTET STRING,
Subj_email OCTET STRING,
Delegate BOOLEAN,
Read BOOLEAN,
Write BOOLEAN,
validFrom GeneralizedTime,
validTo GeneralizedTime
}

FIG. 1C

System Overview

FIG. 2A

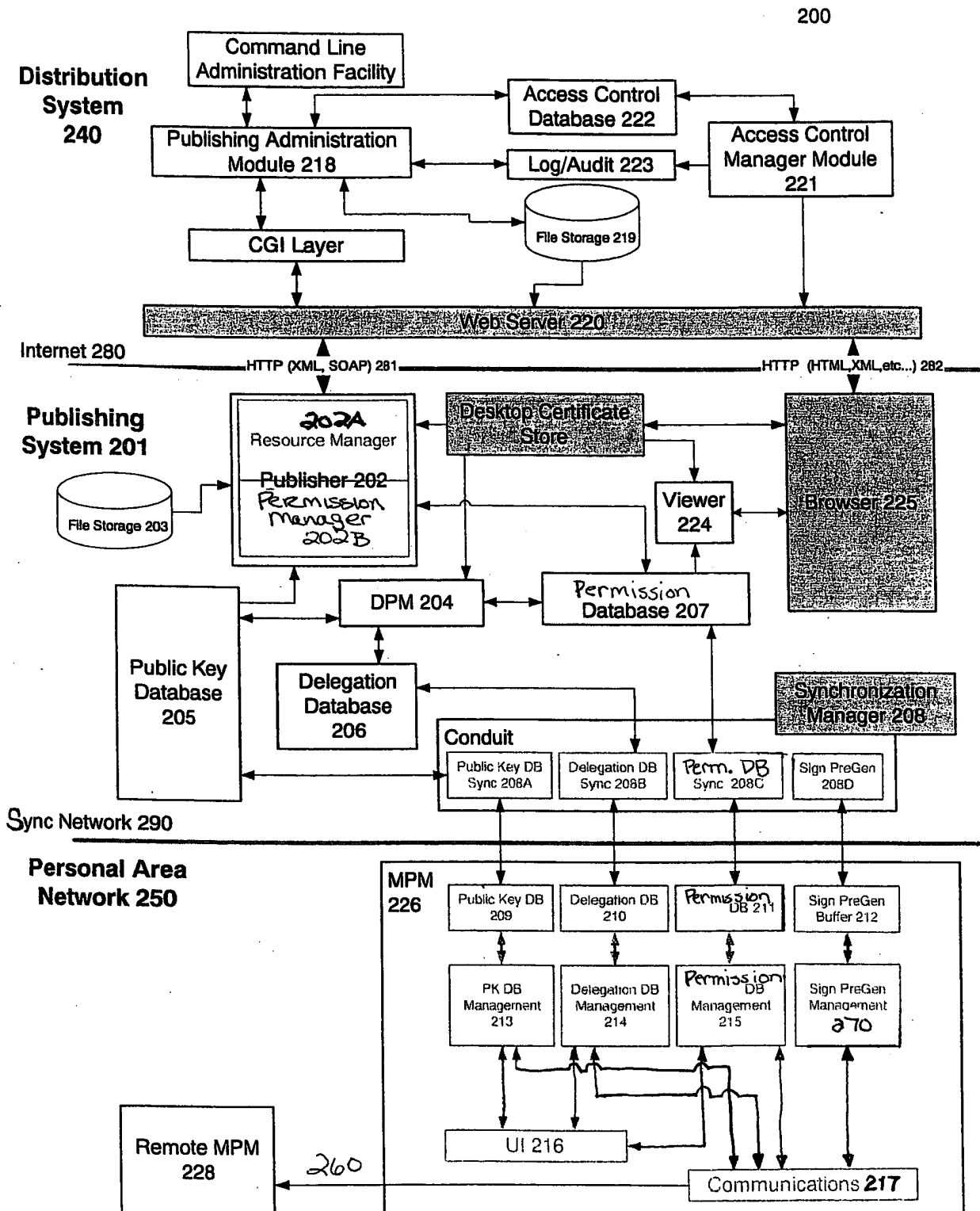


FIG. 2B

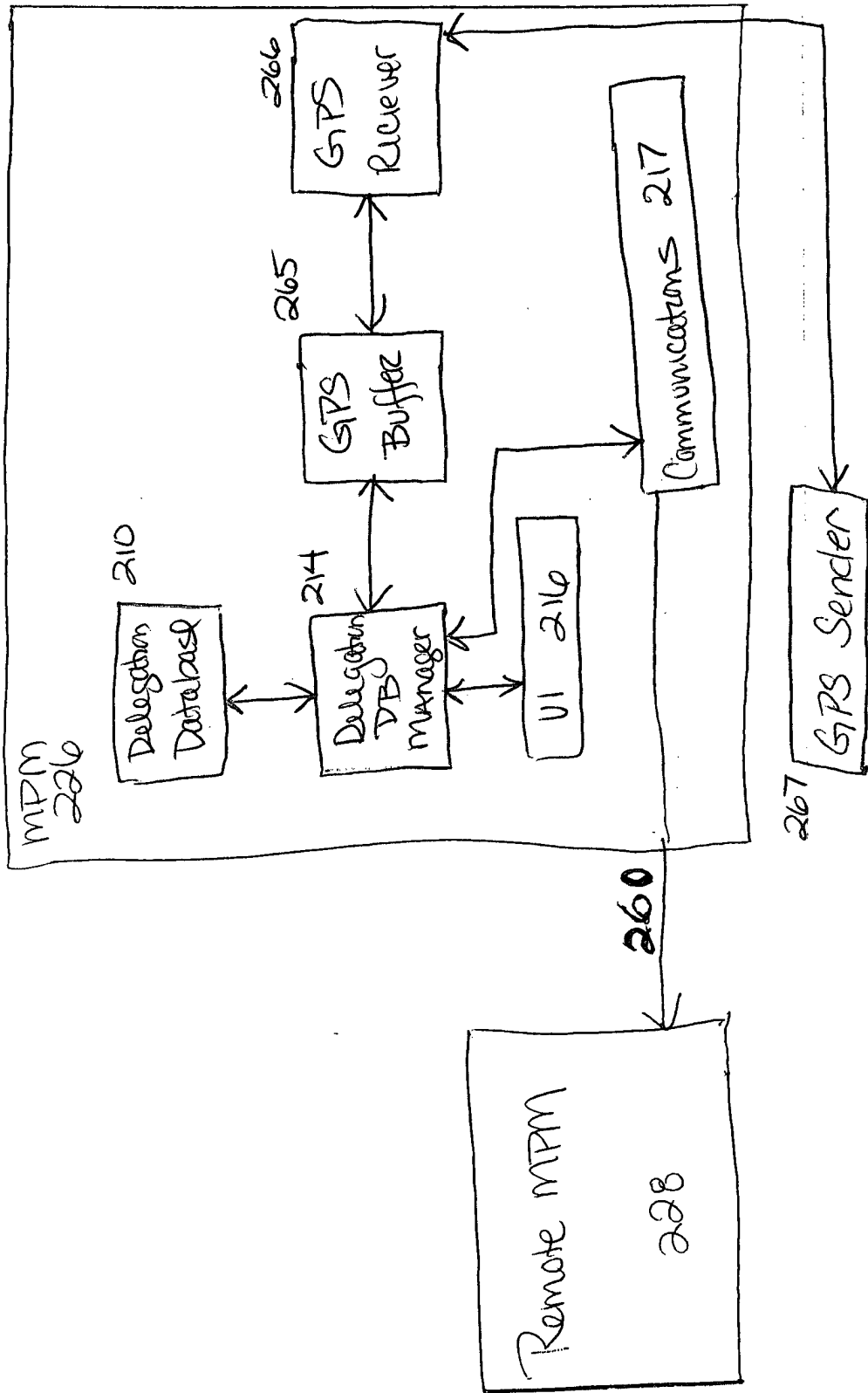
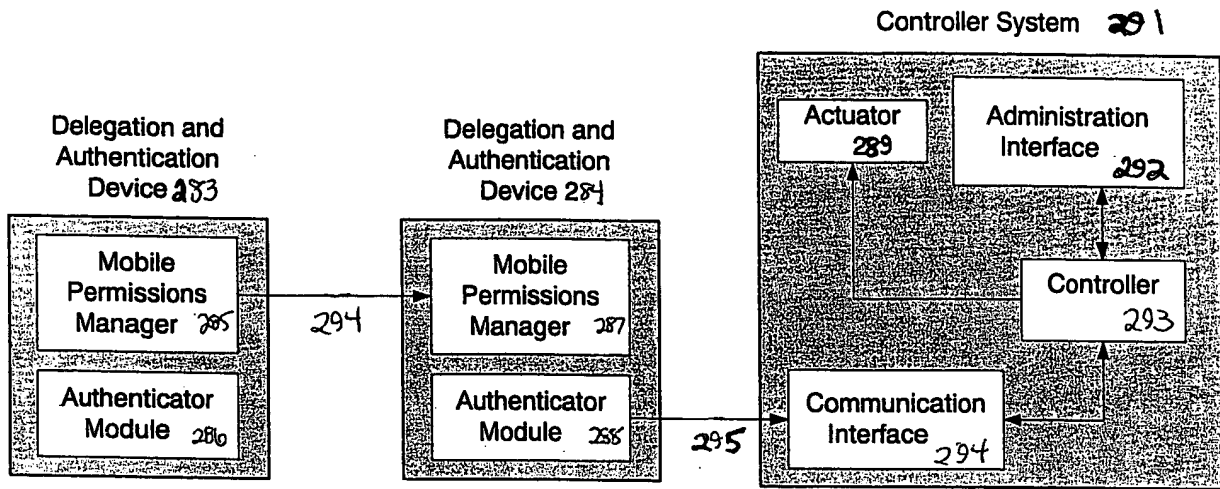


FIG. 2C



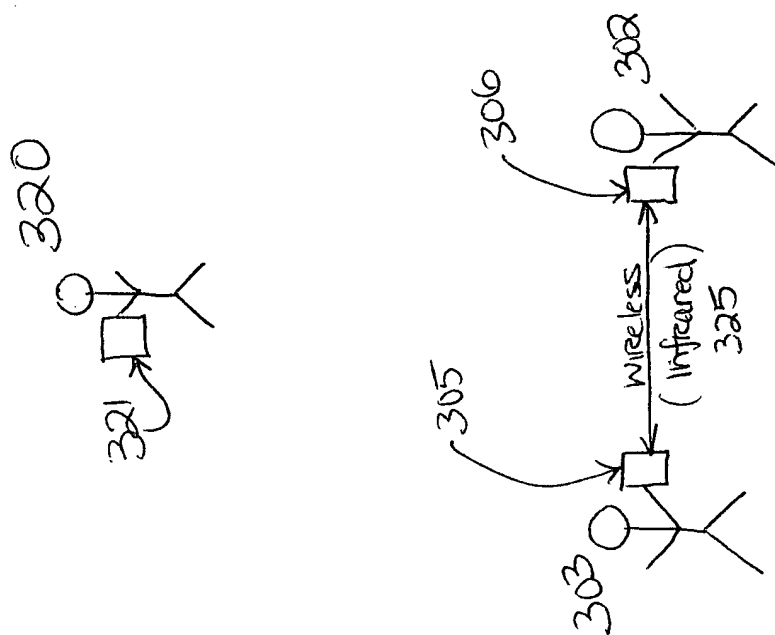


Fig. 3A

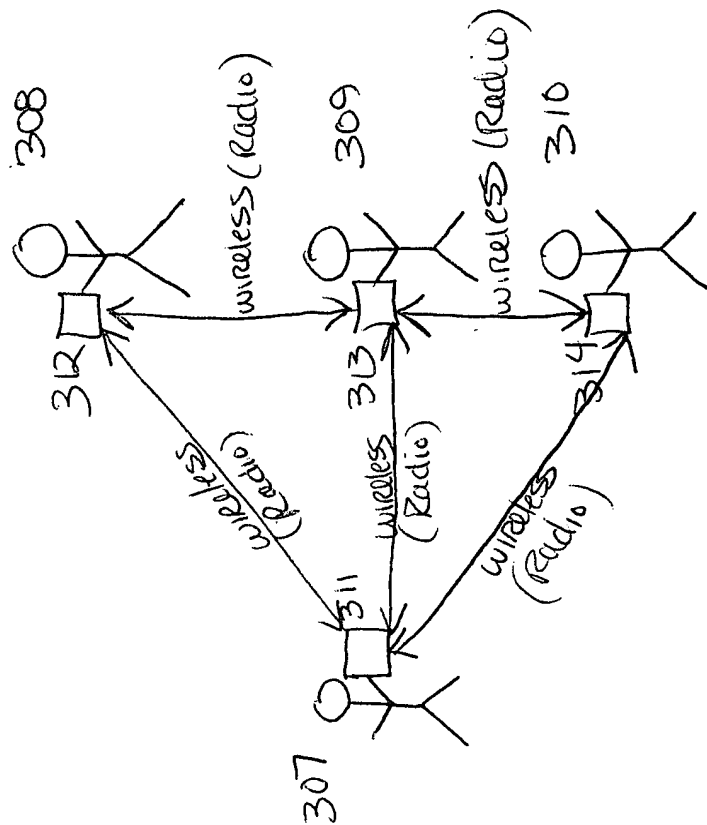


Fig. 3B

Fig. 4

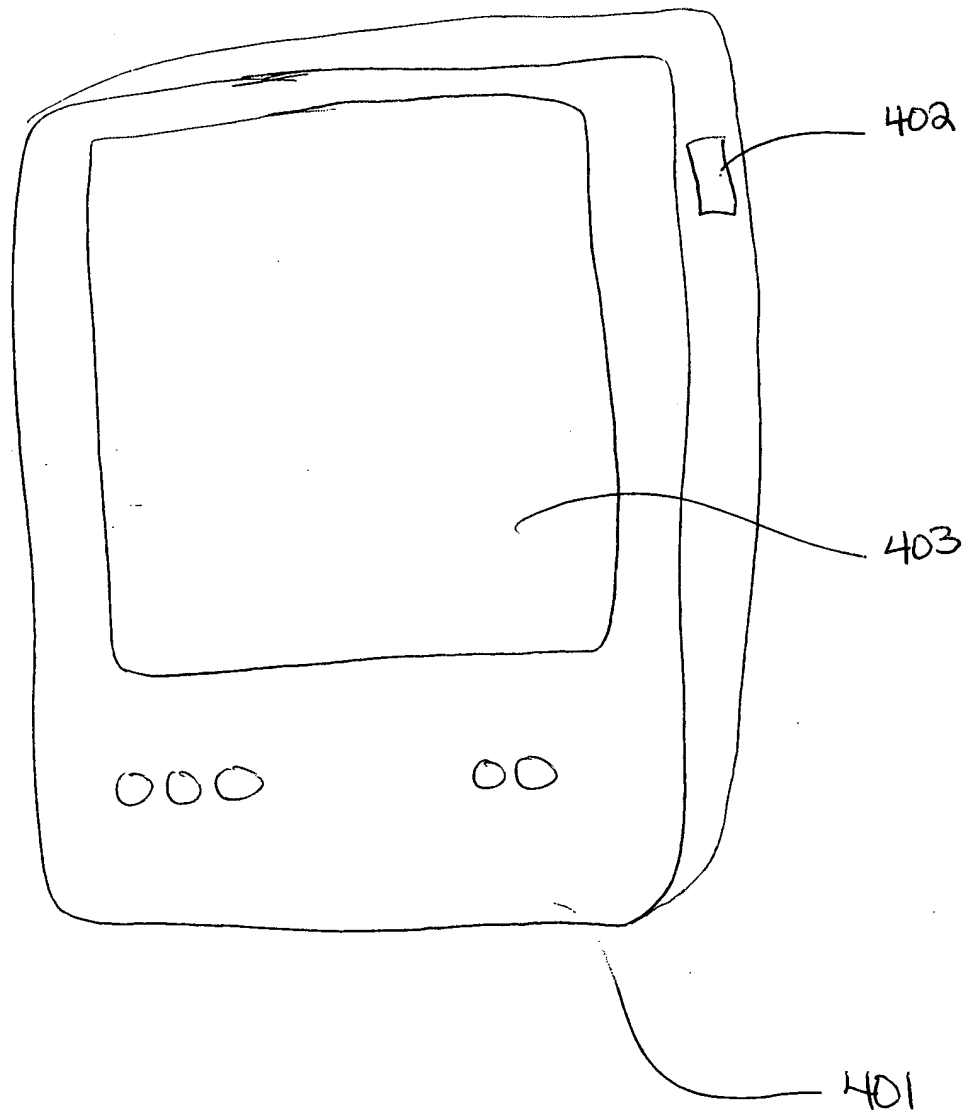


FIG. 5

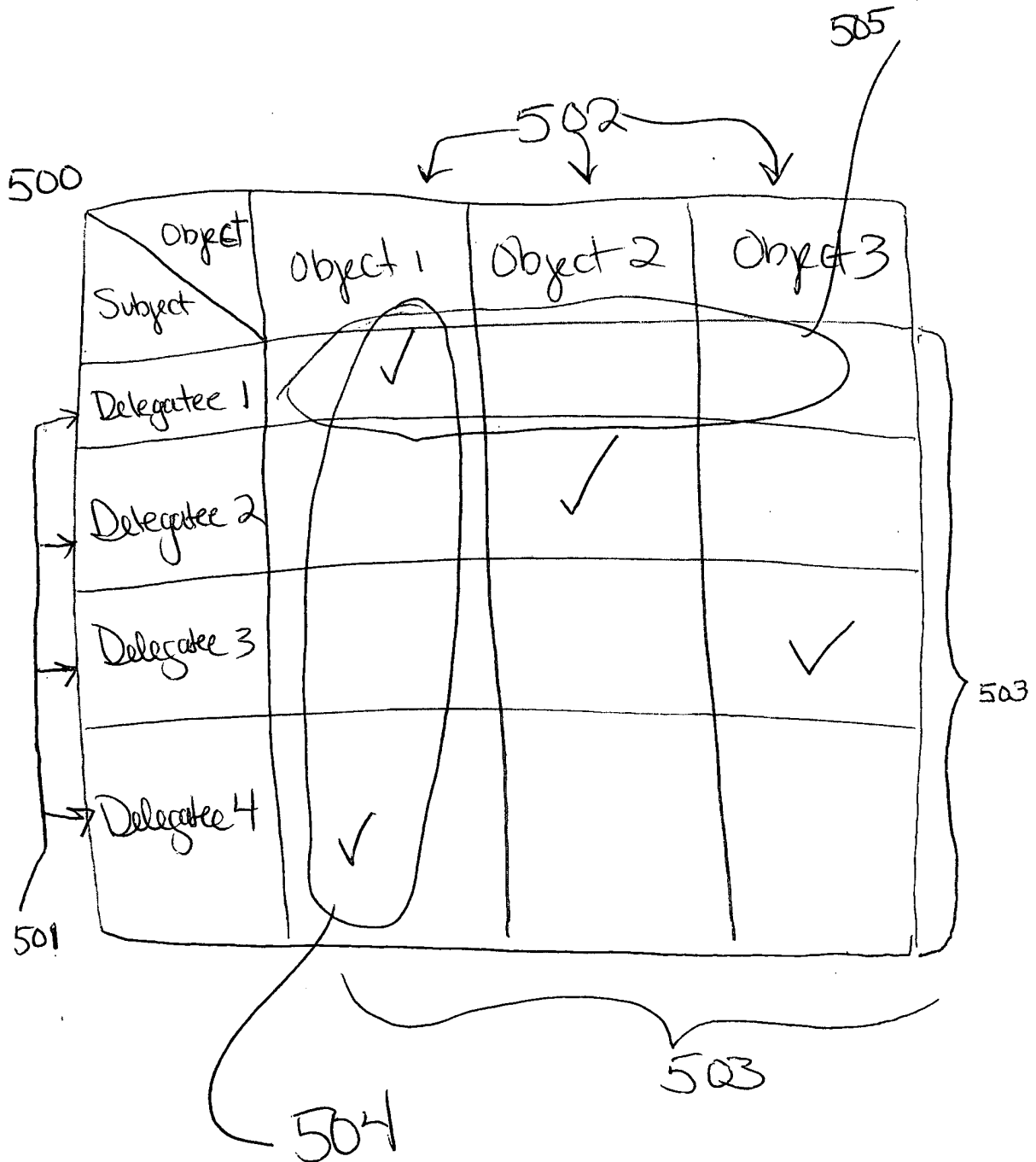
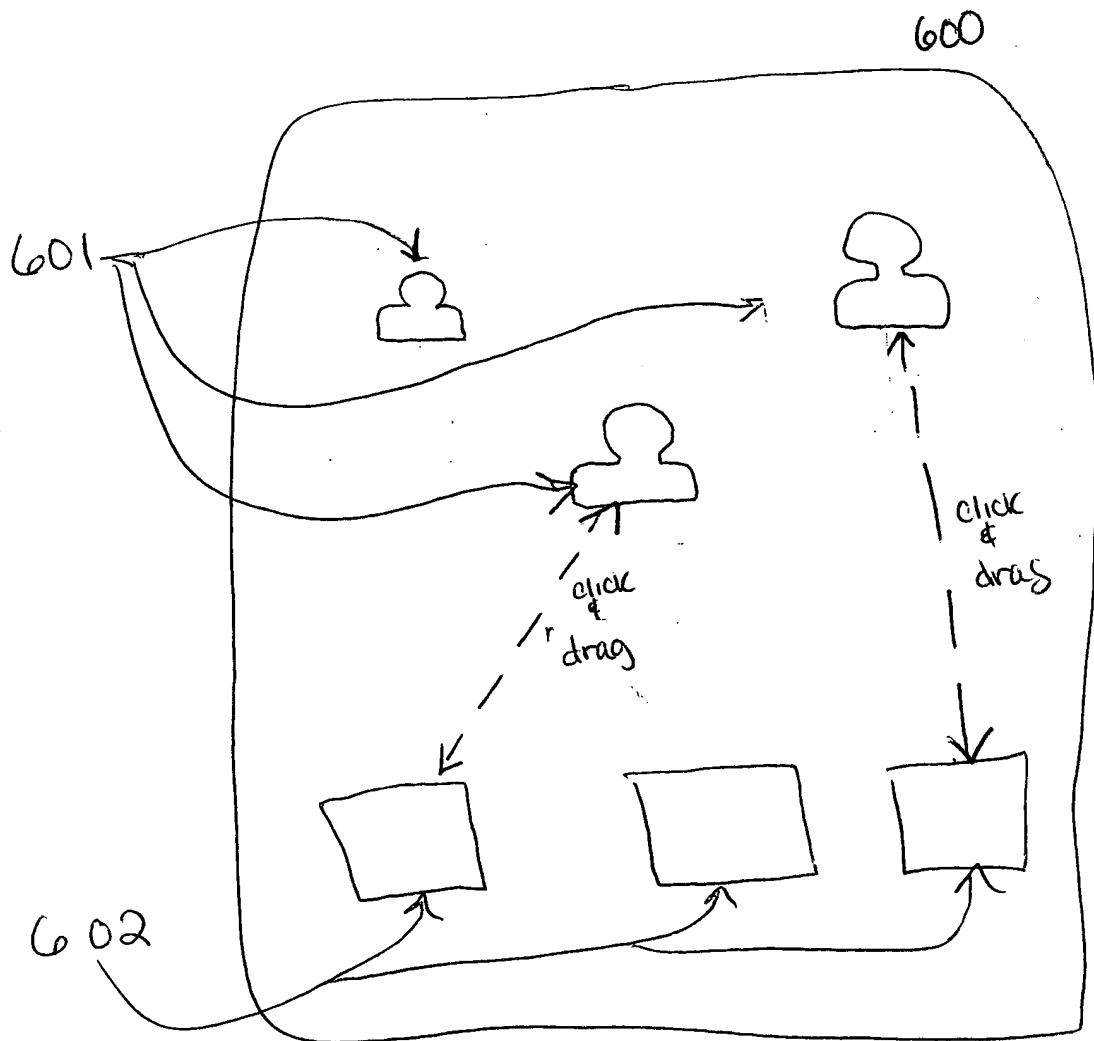


Fig. 6



Sending Permission as part of a header within an HTTP request.
(see <http://www.ietf.org/rfc/rfc2616.txt>).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Vchain: 50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNglg+cwEOzzjT+
v8ywbpyuugQvjluZSSVdfkbe/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mLOnRKrXw
WuX6gW3gr76zVuIz0ylwS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046kLpiXB+O
CloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkXx4w1A0d9GdGAqRycOGFoXtyzps
+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVGNqJemvVURHlDdhnMzYzF
ZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyFPfYYH75ONHjMdDr5qrVbSm4hK2GFZ
IVPnyxYHwTafKHhBU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWgrIzL+jw
LelCfDk2V4SntsK+CFxBVGBU6dWpQYe2x0Bjat5yjbqYfXdz/vXfNxjHoAiUYwt4ZNwK0+
UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DutE6JhrX6U
fR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lBxTyofETq9WofZ3u+bomL8WgchTd
/QPyHMaky37tXEhrjZxUkgJtI0aA12kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP78DSOQC
HMolJQpmjfaOxaCR5wE9mhJGHjtTOpXx3GkLNlNuZYq7tbxYznGNJ2VgwUPpCQppohcWmF
B1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiIEJmtzil
1Dpnt0phJpCDAPyM2XO2bJGrPnimSbUsaELQWdMmtUyczy5TDIlpqjKMNUlytlHdmN2jly
2+hHplkzgxXKhlI/JtC97X2GBbm7nlUnICG6sAbxq6lBHX5sNs1TzWChjYhtFlMuCezT
Umfl1LBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwtPJpJHJ+Sia
/hkB9+alMZXFskMQaBpAE7/BfzRHs+09fDTL+kBfd00w0fvkTo9AlfVF99wiAJ0hZt7q+e
GWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv09iA8i28gQotzjdFX
1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8hHDxgluK
RaAF1xQboHeRlZ9GQHoia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+EakfS+lYQYbauY9
Z+8bRf+G8JnhRZlvcyu5ylRW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtzUR4rv+e
qjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
...
```

FIG. 7.

Sending the permission as part of a "cookie" within an HTTP request
(see <http://www.ietf.org/rfc/rfc2616.txt> and <http://www.ietf.org/rfc/rfc2109.txt>).

```
GET /resource/ HTTP/1.1
Accept: image/gif, image/x-xbitmap, image/jpeg, image/pjpeg,
application/vnd.ms-powerpoint, application/vnd.ms-excel,
application/msword, */*
Accept-Language: en-us
Accept-Encoding: gzip, deflate
User-Agent: Mozilla/4.0 (compatible; MSIE 5.01; Windows NT 5.0)
Cookie: Vchain=50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNglg+cw
EOzzjT+v8ywbpyuugQvjluZSSVDFkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mL
OnRKRxWwUx6gW3gR76zVuIz0ylwS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046k
LpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkJx4w1A0d9GdGAqRycOGF
oXtyzps+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVGNqJemvVUrH1DD
hnMzYzFZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzFlvfyFPfYYH75ONHjMdr5qrVbSm
4hk2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWg
rIzL+jwLe1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbgyfXdz/vXfNxjHoAiUYwt
4ZNwK0+UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DutE
6JhrX6UfR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lxbTyofETq9WofZ3u+bomL
8WgchTd/QPyHMaky37tXEhrjZxUkgJtIOoA12kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP7
8DSOQwCHMolJQPmjfaOxaCR5wE9mhJGHjtTopXx3GkLN1NuZYq7tbxYznGNJ2VgwUPpCQp
pohcWmFB1779OcTc59zt9kV6A3MyeI/lZCP5iW+VjPEa6h5CWhqHDT3mvDXSAJ8Wx66XiI
EJmtzillDpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TDI1lpqjKMNUlyt1H
dmN2jly2+hHplkzgxXKhl1I/JtC97X2GBbm7n1UnICG6sAbxq61BHX5sNs1TzWChjYhtF
lMuCezTUmfllBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwtPJp
JHJ+SIa/hkB9+alMZxfSkMQaBpAE7/BfzRHs+09fDTL+kBFd00w0fvkTo9AlfVF99wiAJ0
hZt7q+eGWkPi5SRO+9/T710r7wNvc9NELRfsziq/v+8LM179yjjCm0chAZTv09iA8i28gQ
otzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8h
HDxgluKRaAF1xQboHeRlZ9GQHoia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+Eakfs+1Y
QYbauY9Z+8bRf+G8JnhRZIVcyu5y1RW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtz
UR4rv+eqjQyE=
Connection: Keep-Alive
Host: www.websitexyz.com
HTTP/1.0 200 OK
Content-Length: 16485
Content-Type: text/html
<html><head><title>WebsiteXYZ</title>
...
```

FIG. 8

Sending the permission as part of a URL

[FIG. 9](http://www.websitexyz.com/resource/?Vchain=50U+F61olMMJzRmZs6QNRhx1UE3artX4ax56AJdJxYR7dzyPNglg+cwEOzzjT+v8ywbpyuugQvjluZSSVDfkbje/C+NV8sLfp5d3eaTykzeP+siJxl7wg3njzn2mLOnRKrXwWuX6gW3gR76zVuIz0ylwS9bZzSiu+ImN/SaHRS3eqBFPL7Ye0lJzin4jH8l046kLpiXB+OCloFRqsCmy5/JCrgvR0lRw2rolg6uXgK8xKdybfSXPkJx4wlA0d9GdGAqRycOGFoXtyzps+bASvdt2UJMssCXAKTw5bi+sUzuTbeX2xPJwDsPvuevICZHVgwnqJemvVUrHlDDhnMzYzFZfTqeZ6sYAZCvsAiCYghRB6fK9JJV/vj9CzF1vfyFPfYYH75ONHjMdDr5qrVbSm4hK2GFZIVPnyxYHwTafKHhbU2aQ5KFZbBGMwIikfBRMVfsqz3hpKa5Pd+NZELIwQ4FWlWgrIzL+jwLe1CfDk2V4SntsK+CFxBVGbU6dWpQYe2x0Bjat5yjbgyfXdz/vXfNxjHoAiUYwt4ZNwK0+UG78+Elrtw2UoIUPuQoCpCXh9EMeaACc7gSKY2KfuY10FeCHZ00c16a4M82DUtE6JhrX6UfR08r9QmxVnZu0/MW2vbWNS6rCUvsw78zWpChy3V1lbtYofETq9WofZ3u+bomL8WgchTd/QPyHMaky37tXEhrjZxUkgJtI0oA12kVaTDERIwBnhQYM3mzp48n8wCq8qH2JP78DSOQwCHMolJQPmjfaOxaCR5wE9mhJGHjtTOpXx3GkLN1NuZYq7tbxYznGNJ2VgwUPpCQppohcWmFB1779OcTc59zt9kV6A3MyeI/lZCP5iW+vJPEa6h5CWhqHDT3mvDXSAJ8Wx66XiIEJmtzil1Dpnt0phJpCDAPyM2X02bJGrPnimSbUsaELQWdMmtUyczy5TDI1pqjKMNUlytlHdmN2jly2+hHplkzgxXKhlI/JtC97X2GBbm7nlUnICG6sAbxq61BHX5sNs1TzWChjYhtFlMuCezTUmfl1LBgGPgh6Uv3oyUVoasRmsKi6qbqweDdxXfZD3uFR/iJNLUzwnt3/PJwtpJpJHJ+Sia/hkB9+alMZxfSkMQaBpAE7/BfzRHs+09fDTL+kBFd00w0fvkTo9A1fVF99wiAJ0hZt7q+eGWkPi5SRO+9/T710r7wNvC9NELRfsziq/v+8LM179yjjCm0chAZTv09ia8i28gQotzjdFX1fE3vL0wmrP/6lGSfqZhWc2Ho/m7FmqA9pJQVCRsVXXQOSWAZdPC3a75Jxyoa8hHDxgluKRaf1xQboHeRlZ9GQHoia9ucQORhrbIu0S2Oafj99QjmszP3gQ64Pw+EakfS+lYQYbauY9Z+8bRf+G8JnhRZIVcyu5ylRW74goguqs6BSf6NcuC3rBJhf30xn15l/a8SraFtzUR4rv+eqjQyE=</p></div><div data-bbox=)

Fig. 10

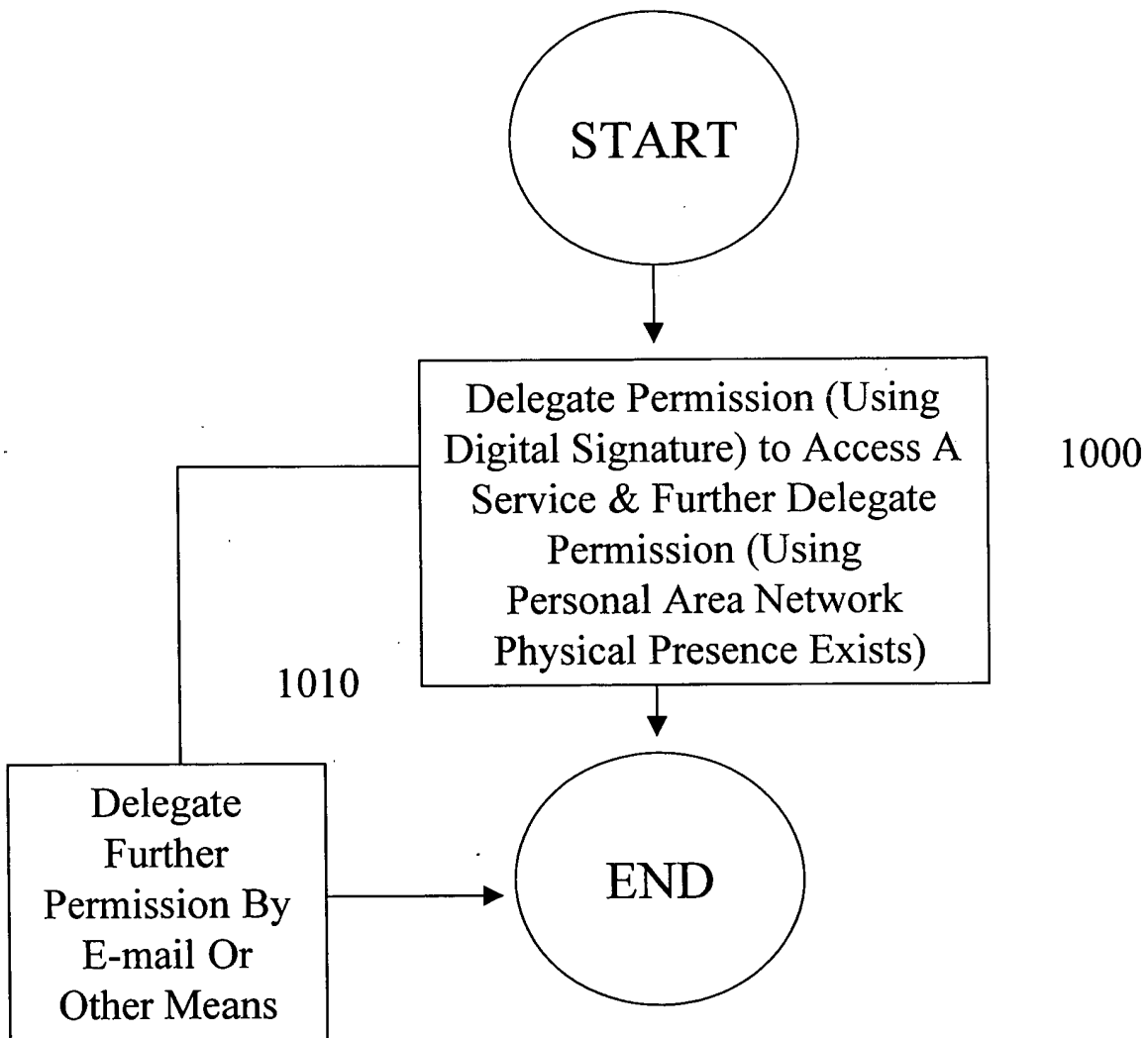


Fig. 11

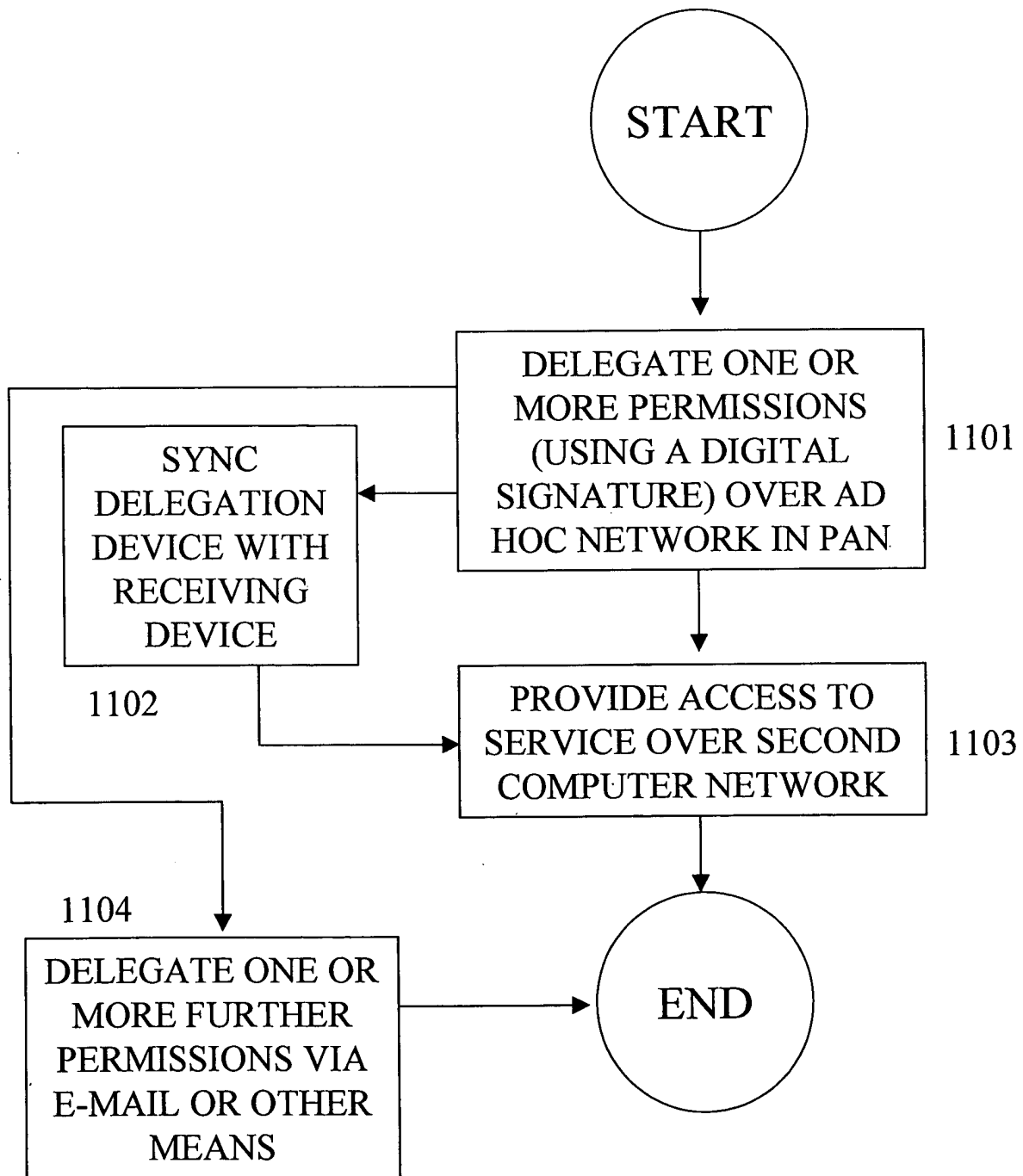


Fig. 12

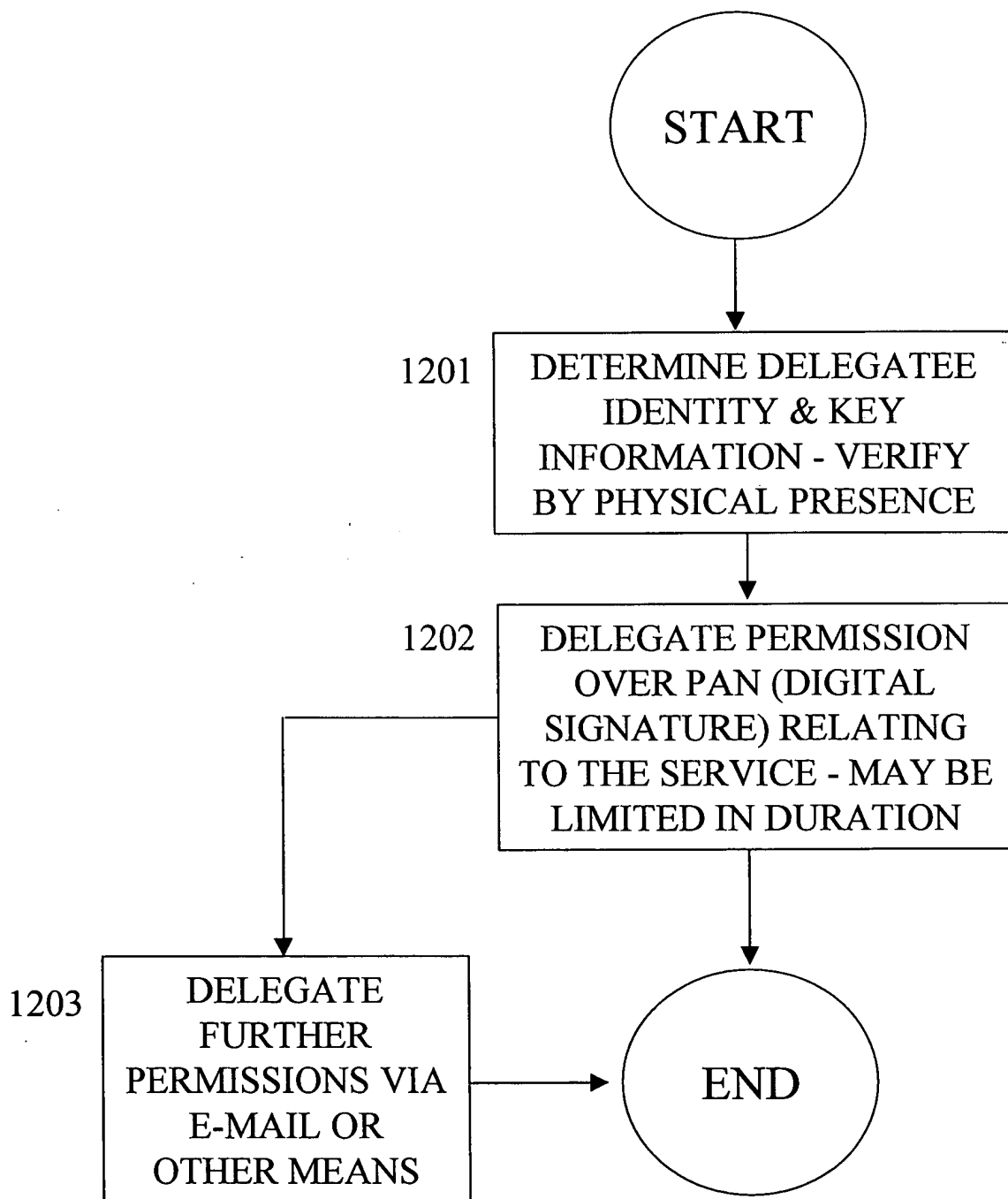


Fig. 13

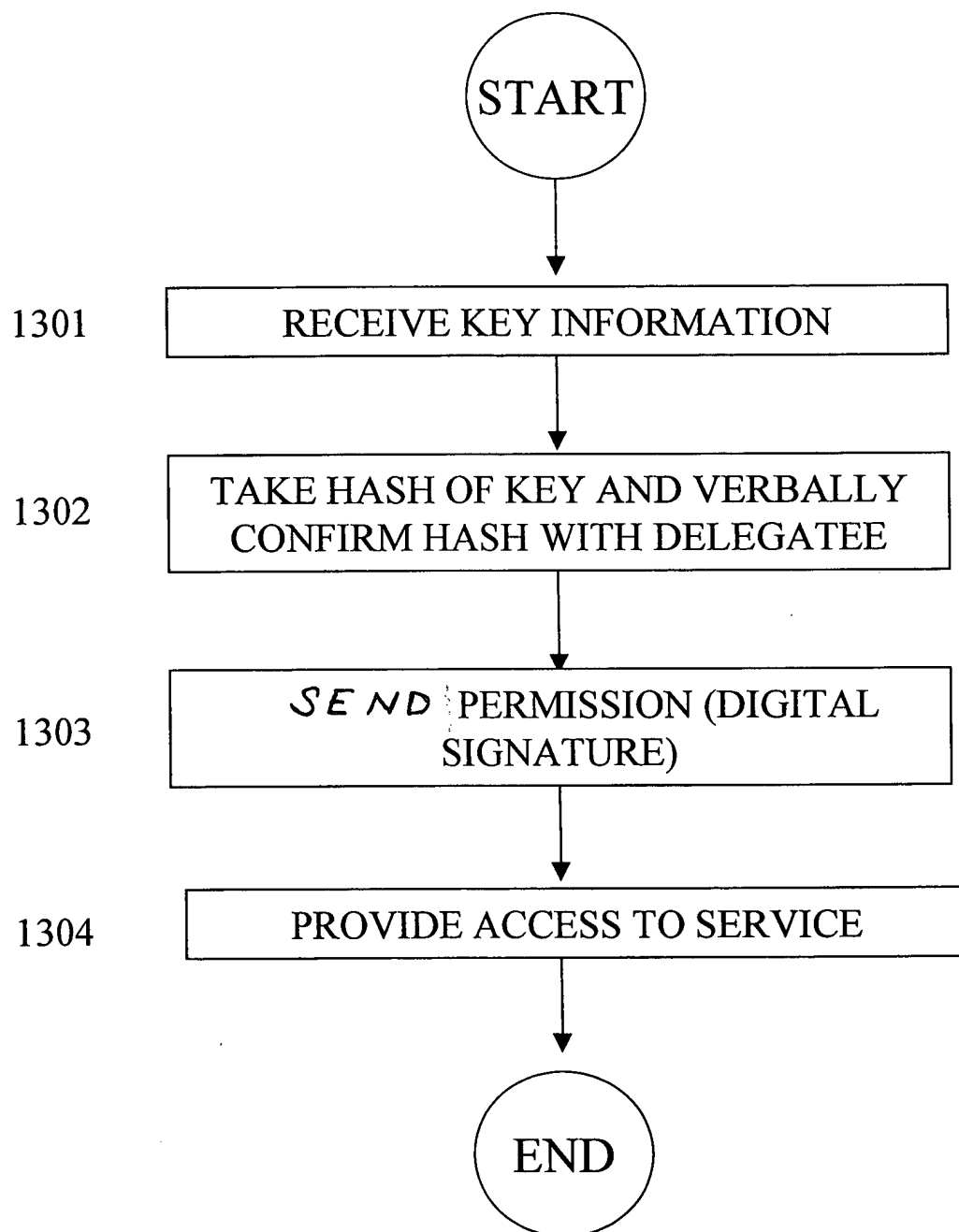


Fig. 14

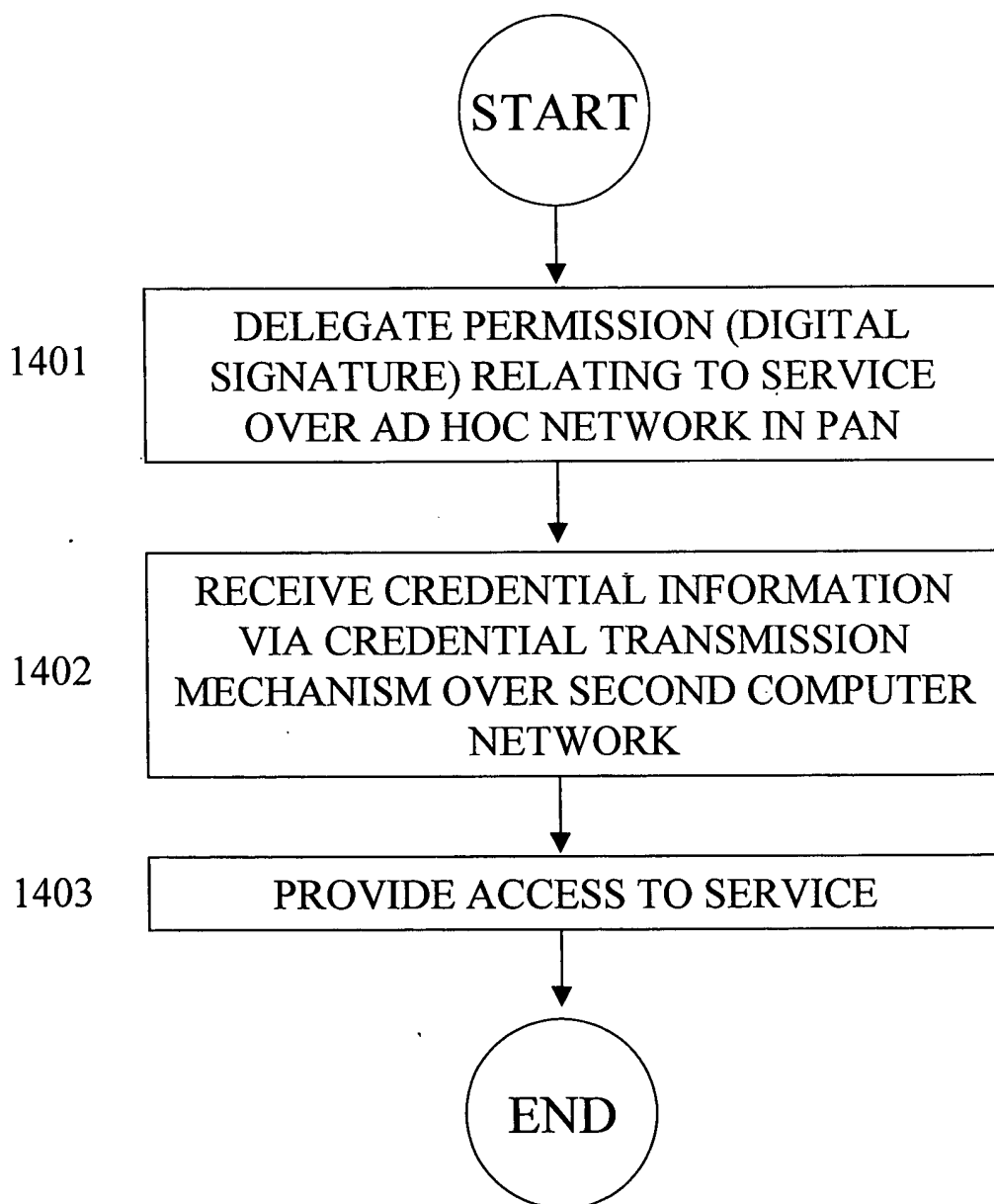


Fig. 15

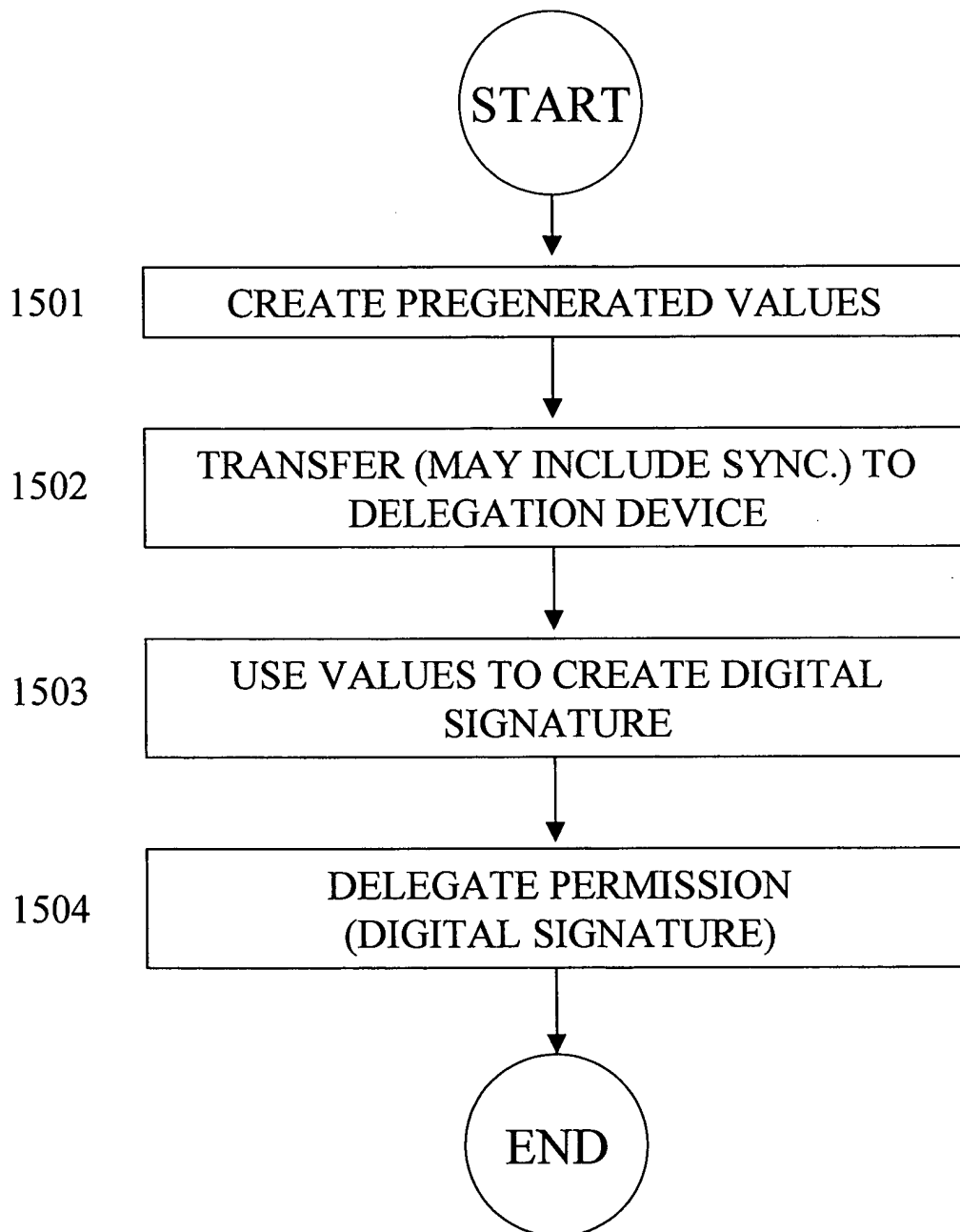


Fig. 16

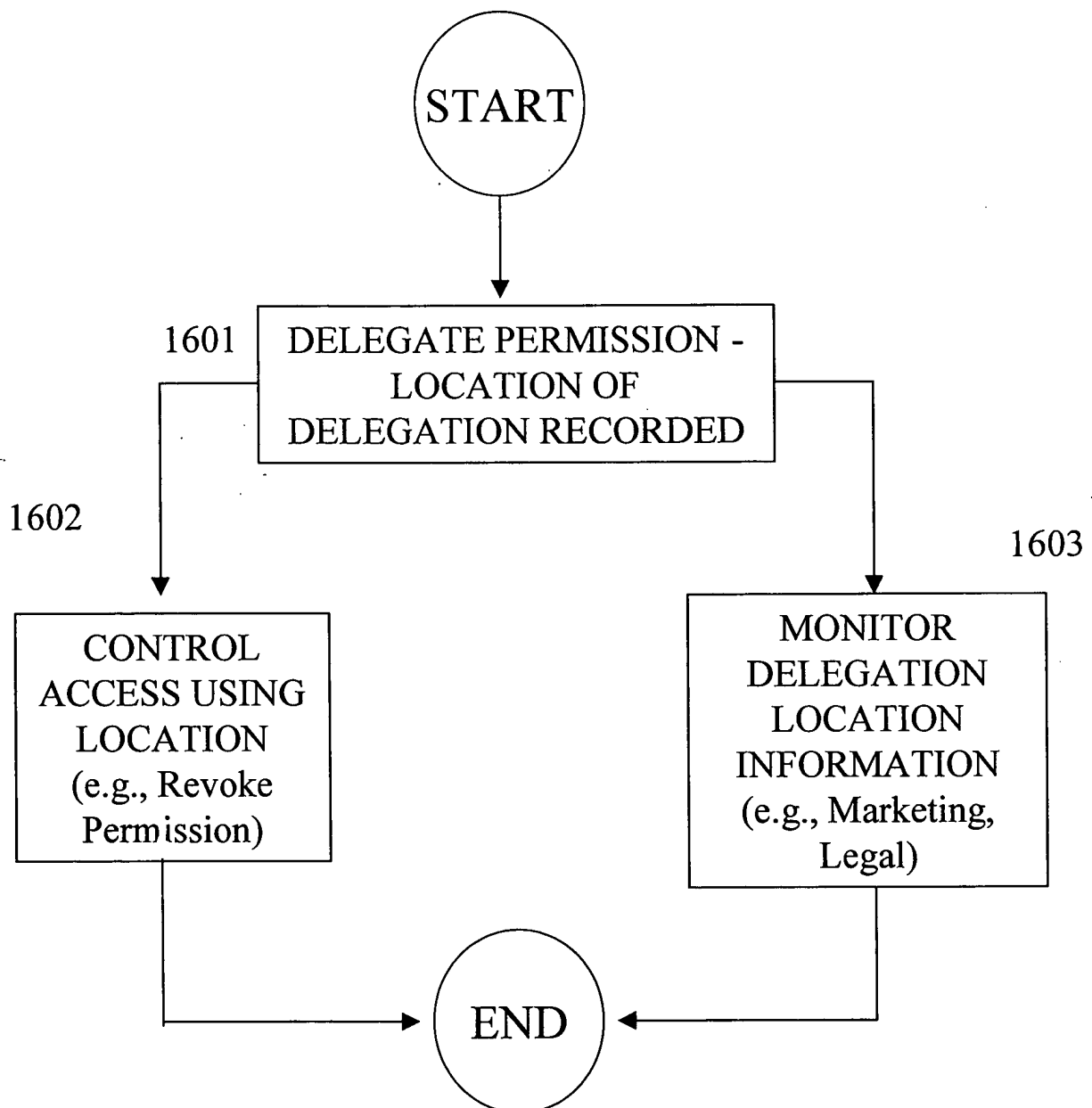


Fig. 17

